May 2002

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Thailand

Thailand is a significant energy consumer, and its energy consumption is expected to resume strong growth as the country recovers from the global economic slowdown of the last two years.

Note: The information in this report is the best avavilable as of May 2002 and can change.

GENERAL BACKGROUND

Thailand's economy is beginning to recover from the global economic slowdown of the past two years, which led to reduced demand for Thai exports. The country's real gross domestic product (GDP) grew only 1.0% in 2001, and is projected to grow 1.8% in 2002, resuming a growth rate of over 4% in 2003. Longer-term annual growth rates beyond 2002 are projected in the range of 4%-5%.

Still, the risks confronting Thailand's economic recovery are serious. The Thai economy is burdened by a relatively weak banking sector with a high proportion of non-performing loans. Delays in the restructuring of corporate debt also have been worrisome enough to prompt warnings from the International Monetary Fund (IMF) and international credit rating analysts. Any worldwide economic downturn could affect Thailand rapidly due to these structural weaknesses.

Thailand's energy sector is undergoing a period of restructuring and privatization. The Thai electric utility and petroleum industries, which have historically been state-controlled monopolies, are currently being restructured.

OIL

Thailand contains 516 million barrels of proven oil reserves. In 2001, Thailand produced about 175,027 barrels per day (bbl/d) of oil, an increase of about 4,000 bbl/d from the previous year. Of that production, about 114,027 bbl/d was crude oil. Most of the remainder was natural gas liquids (NGLs). Oil consumption

peaked in 1996 at 749,000 bbl/d. It fell to 706,000 bbl/d in 1998 during the Asian financial crisis, but moved back up 715,000 bbl/d in 2001. Part of the reason consumption has not recovered fully is that the Thai government has been raising taxes on petroleum products, which is intended to promote conservation and to reduce oil imports.

The oil industry in Thailand is dominated by PTT, formerly the Petroleum Authority of Thailand. PTT Exploration and Production (PTTEP) is the main upstream subsidiary of PTT. Thai Oil, the country's largest refiner, is also controlled by PTT. PTT underwent a partial privatization in November 2001, in which 32% of its equity was sold through the Bangkok Stock Exchange. The Thai government still owns a 68% stake in PTT, and does not plan to sell its controlling interest in the near future.

Despite the industry's financial problems, there have been a number of significant recent oil discoveries, most notably offshore in the Gulf of Thailand. The country's modest proven oil reserves rose in 2001, from 352 million barrels in January 2001 to 516 million barrels by the end of the year, as a result of small new finds. Chevron is investing heavily in developing Block B8/32 in the Gulf of Thailand. Unocal also is investing in offshore oilfield development, and reported a significant new find in October 2000. PTTEP has stakes in these projects.

Refining/Downstream

Thailand has four oil refineries, with a combined capacity of 681,750 bbl/d. The three main refineries are Shell Co. Of Thailand Ltd. (275,000 bbl/d) located in in Rayong, Thai Oil Co. Ltd., in Sriracha (185,000 bbl/d), and Esso Standard Thailand Ltd. (160,000 bbl/d), also located in Sriracha.

In response to low refining margins, Thai refiners have been trying to reduce operating costs. In late 1997, the Thai government allowed refiners to reduce required petroleum stocks to help ease liquidity problems, save foreign exchange, and reduce storage costs. The move was reversed in late 2000, however, and the Thai government intends to eventually require a reserve equal to about two months of consumption.

Thailand also plans to reduce its consumption of petroleum and imports of gasoline additive methyl tertiary butyl ether (MTBE) in the future by promoting ethanol. Thailand and Brazil signed an agreement in November 2000 for cooperation in the field of ethanol production. The Thai government approved a package of tax incentives in December 2000 to encourage more production of ethanol for fuel use, but as of early 2002, it is not yet blended into gasoline in commercial quantities.

NATURAL GAS

Thailand contains about 12.7 trillion cubic feet (Tcf) of proven natural gas reserves, of which it produced (and consumed) 658 billion cubic feet (Bcf) in 2000. Much of the country's natural gas is used for generating electricity, and Thailand completed its program for the conversion of almost all oil-fired electric power plants to natural gas in 2001. Demand for natural gas is expected to rise at a 6% annual rate over the next five years, which represents a substantial revision downward from previous official estimates. Bongkot is Thailand's largest gas field, located 400 miles south of Bangkok in the Gulf of Thailand. Thailand also began imports of gas from Burma in late 2000, used mainly at the Ratchaburi power plant. PTT also plans to build an extensive gas distribution network around Bangkok, which will provide fuel for power plants as well as large industrial consumers.

Thailand's economic difficulties in 1997-1998 also forced the country to re-examine two gas deals signed with Oman and Indonesia. Planned imports of liquefied natural gas (LNG) from Oman and piped natural gas from Indonesia's Natuna gas fields, for which preliminary agreements had been signed in the mid-1990's, were delayed until at least 2007. Development of Thailand's domestic natural gas resources and the imports from Burma are expected to cover anticipated Thai demand in the meantime.

Unocal Thailand is the country's largest gas producer, and has continued to increase its production with the development of new reserves. The Pailin gas field, which came onstream in August 1999, added 165 million cubic feet per day (Mmcf/d) to Thailand's gas production. Unocal also started production at the Trat field in 1999. Unocal is planning a second phase of development at its Pailin field beginning in mid-2002, which will eventually incease its production from the current 165 Mmcf/d to around 330 Mmcf/d.

Chevron is currently producing about 145 MMcf/d from its offshore Block B8/32. The company has put its estimated gas reserves in the block at 2.5 Tcf, and has plans to expand production in the future to about 250 Mmcf/d.

The $1-billion, 416-mile Thai-Burmese natural gas pipeline, running from Burma's Yadana gas field in the Andaman Sea to an Electricity Generating Authority of Thailand (EGAT) power plant in Ratchaburi province, was completed in mid-1999. A new connecting line also has been built linking Ratchaburi to the Bangkok area, which provides for other uses for imported Burmese gas in addition to the Ratchaburi power plant.

Joint Development Area

One of Thailand's most active areas for gas exploration is the Malaysian-Thailand Joint Development Area (JDA) located in the lower part of the Gulf of Thailand, and governed by the Malaysia-Thailand Joint Authority (MTJA). The JDA covers blocks A-18 and B-17 to C-19. A 50:50 partnership between Petronas Carigali and Triton Energy Ltd. (now a subsidiary of Amerada Hess) is developing the Cakerwala field in block A-18 while PTTEP and Petronas Carigali also share equal interests in the remaining blocks. A gas sales agreement was signed in October 1999 for sales of gas from the block to PTT and Petronas, for use in both Thailand and Burma. PTT has agreed to purchase 390 Mmcf/d of gas over 10 years from the Cakerawala field, the first JDA field to come on stream, beginning in 2006. Nautural gas deliveries prior to then will be solely to Malaysia. Cakerawala contains estimated reserves of 2 Tcf.

As the project has moved forward, however, it has become controversial in Thailand. The pipeline is to come ashore in Songkla province in Thailand with a connection overland to Malaysia. Strong opposition to the project developed in 2000 among residents of Songkla, who have voiced concerns about the environmental impact of the project. The Thai government announced a decision in May 2002 to proceed with construction of the pipeline, but on slightly differenct route which will avoid local population centers. Construction is scheduled to begin later this year.

ELECTRIC POWER

Thailand had 19 gigawatts (GW) of electric generation capacity as of January 2000, and generated approximately 94 billion kilowatt-hours (Bkwh) of electricity. The decline of the Thai economy as a result of the Asian financial crisis resulted in a decline in domestic demand for electricity of about 3 Bkwh in 1998, before rebounding in 1999. This situation compelled EGAT, the state-owned electricity company, to revise its electricity demand projections. EGAT postponed or delayed a number of projects including: delaying the commissioning of the third and fourth 300-MW thermal units of the Ratchaburi power complex by three years to 2004 and 2005, respectively; postponing the start-up of the second 300-MW thermal unit at the Krabi power plant from 2001 to 2005; reducing power purchases from small power producers (SPPs) from 3,200 MW to 2,000 MW for the period 1997-2003; and delaying power purchases from three Laotian projects - the lignite-fired Hongsa project and the Nam Ngum 1-2 hydro projects to 2004 and 2005, respectively. While demand growth has recovered in step with Thailand's economic recovery, EGAT decided to lower its planned generating capacity reserve from 25% to 15%, which has diminished the immediate need for additional generating capacity. In recent months, reserve capacity has still been over 25%, though demand growth forecast at 4% is expected to produce requirments for additional power plants.

The Ratchaburi power plant, Thailand's largest power project, has moved forward despite the slowdown in power demand growth. The complex eventually will have a capacity of 3,200 MW, including 1,800 MW in six combined cycle gas-fired generators and 1,400 MW in two conventional thermal units which can burn either natural gas or fuel oil. The first combined-cycle unit began operation in January 2000, and the current capacity of the plant is 2,125 MW. Ownership of the plant was transferred from EGAT to Ratchaburi Electric Generation in October 2000, and a successful initial public offering of stock was carried out, only the second IPO on the Thai market since the crisis of 1997-98.

One other IPP also began operation in August 2000, Tri Energy, which has a 700-MW plant at Ratchaburi. The company is owned by a consortium including Edison Mission Energy, Texaco, and local Thai firms. Additional IPP capacity may be added later in the coming decade. The Thai government has stated that it plans to eventually privatize EGAT, but it is still studying the options for structuring the privatization process.

The Thai government announced a decision in May 2002 to postpone two new coal-fired power projects in southern Thailand at Bo Nok and Hin Krut by at least two years. The two projects, originally scheduled for completion in 2002, had been met by opposition from local communities and environmentalists. The Thai government also announced its intention to assess the possibility of changing the location of the new power plants and switching to natural gas as a fuel.

ENVIRONMENT

In 1998, as a direct result of the Asian economic crisis, energy consumption in Thailand decreased for the first time in over 30 years. Total energy consumption in 1998 dropped around 5% to 2.4 quadrillion Btu (quads), before rebounding to 2.5 quads in 1999 and nearly 2.6 quads in 2000. The largest sectoral consumer of energy in Thailand -- the industrial sector -- experienced the largest percentage drop in energy use as a result of the economic crisis. In contrast (and irrespective of the financial crisis), the transportation sector experienced an increase in output and in 1998 accounted for 30% of total energy consumption. Thailand's carbon emissions can largely be attributed to the industrial and transportation sectors. In 1998 the industrial sector was responsible for emitting 19.2 million metric tons of carbon, while the transportation sector added another 18.4 million metric tons of carbon. Carbon emissions fell to 42.7 million metric tons in 1998 as a result of the recession, then recovered to 44.6 million metric tons in 1999 and 45.2 million metric tons in 2000.

The government of Thailand has set a goal to triple the production of renewable energy from 1% to 3% of total power production over the next five years, by earmarking a fifth of the country's newly approved Baht 30-billion national conservation program for the promotion of renewable energy.

Energy intensity in Thailand is on par with energy intensity levels of other countries in southeast Asia. In 2000, Thailand consumed 14.9 thousand Btu per $1995. Thailand's energy consumption per dollar of GDP has risen over the previous two decades, from 12.8 thousand Btu per $1995 in 1980, but down from a peak of 15.2 thousand Btu per $1995 in 1999. In 2000, carbon intensity in Thailand measured 0.26 metric tons of carbon per thousand $1995 down from a peak of 027 metric tons per $1995 in 1999.

Sources for this report include: CIA World Factbook 2000; Dow Jones News Wire service; Economist Intelligence Unit ViewsWire; Oil & Gas Journal; Petroleum Intelligence Weekly; Platt's Oilgram News; Reuters News Wire; U.S. Energy Information Administration; U.S. Department of State; DRI/WEFA Asia Economic Outlook.

COUNTRY OVERVIEW

Chief of State: King Phumiphon Adunyadet (since 6/9/46)

Prime Minister: Thaksin Shinawatra (since February 2001)
Independence: 1238 (traditional founding date)
Population (2001E): 61.8 million
Location/Size: Southeastern Asia/514,000 square kilometers (198,455 square miles), about twice the size of Wyoming
Major Cities: Bangkok (capital)
Language: Thai, English, ethnic and regional dialects
Ethnic Groups: Thai (75%), Chinese (14%), other (11%)
Religions: Buddhism, 95%; Muslim, 4%; Other, 1%
Defense (8/98): Army, 150,000; Navy, 64,000; Air Force, 40,000; Paramilitary Forces, 139,500

ECONOMIC OVERVIEW
Currency: Baht (Bt)
Exchange Rate (5/6/02): US$1 = Bt43.1
Gross Domestic Product (2001E): $111.9 billion
Real GDP Growth Rate (2001E): 1.8% **(2002F):** 1.8%
Inflation Rate (consumer prices) (2001E): 1.7% **(2002F):** 1.7%
Current Account Balance (2001E): $4.8 billion
Merchandise Exports (2001E): $63.4 billion
Merchandise Imports (2001E): $53.8 billion
Trade Balance (2001E): $7.8 billion
Major Export Products (2001): Textiles, canned food, integrated circuits, rice, tapioca, rubber, maize, precious stones
Major Import Products (2001): Food and beverages, household appliances, chemicals, base metals, machinery, fuel and lubricants
Major Trading Partners (2001): Japan, United States, Malaysia, Singapore, EU
External Debt (2001E): $61.1 billion

ENERGY OVERVIEW
Proven Oil Reserves (1/1/02E): 515.7 million barrels
Oil Production (2001E): 175,027 barrels per day (bbl/d), of which 114,027 bbl/d is crude oil
Oil Consumption (2001E): 715,000 bbl/d
Net Oil Imports (2001E): 539,973 bbl/d
Crude Oil Refining Capacity (1/1/02E): 681,750 bbl/d
Natural Gas Reserves (1/1/02): 12.7 trillion cubic feet
Natural Gas Consumption/Production (2000E): 658 billion cubic feet (bcf)
Recoverable Coal Reserves (12/31/96): 2.2 billion short tons
Coal Production (2000E): 19.6 million short tons
Coal Consumption (2000E): 24.9 million short tons
Electric Generation Capacity (1/1/00E): 19 gigawatts
Electricity Generation (2000E): 94 billion kilowatthours

ENVIRONMENTAL OVERVIEW
Total Energy Consumption (2000E): 2.6 quadrillion Btu* (0.6% of world total energy consumption)
Energy-Related Carbon Emissions (2000E): 45.2 million metric tons of carbon (0.7% of world total carbon emissions)
Per Capita Energy Consumption (2000E): 41.0 million Btu (vs. U.S. value of 351.0 million Btu)
Per Capita Carbon Emissions (2000E): 0.7 metric tons of carbon (vs. U.S. value of 5.6 metric tons of carbon)
Energy Intensity (2000E): 14,929 Btu/ $1995 (vs U.S. value of 10,918 Btu/ $1995)**
Carbon Intensity (2000E): 0.26 metric tons of carbon/thousand $1995 (vs U.S. value of 0.17 metric

tons/thousand $1995)** **Sectoral Share of Energy Consumption (1998E):** Industrial (42.1%), Transportation (29.8%), Residential (16.6%), Commercial (11.5%)
Sectoral Share of Carbon Emissions (1998E): Industrial (41.3%), Transportation (36.2%), Commercial (12.1%), Residential (10.4%)
Fuel Share of Energy Consumption (2000E): Oil (57.8%), Natural Gas (25.0%), Coal (9.3%)
Fuel Share of Carbon Emissions (2000E): Oil (60.7%), Natural Gas (20.4%), Coal (18.9%)
Renewable Energy Consumption (1998E): 412 trillion Btu*
Number of People per Motor Vehicle (1998): 9.7 (vs. U.S. value of 1.3)
Status in Climate Change Negotiations: Non-Annex I country under the United Nations Framework Convention on Climate Change (ratified December 28th, 1994). Signatory to the Kyoto Protocol (February 2nd, 1999- not yet ratified)
Major Environmental Issues: Air pollution from vehicle emissions; water pollution from organic and factory wastes; deforestation; soil erosion; wildlife populations threatened by illegal hunting
Major International Environmental Agreements: A party to Conventions on Climate Change, Endangered Species, Hazardous Wastes, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Tropical Timber 83 and Tropical Timber 94. Has signed, but not ratified, Biodiversity and Law of the Sea

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP based on EIA International Energy Annual 2000

ENERGY INDUSTRY
Major Foreign Oil Company Involvement: Chevron; Shell; Texaco; Total; Unocal
State Energy Companies: PTT is the state oil company. Electricity Generating Authority of Thailand (EGAT), Thailand's state electric power authority, has spun off Electricity Generating PCL (EGCOMP), but still owns a 41% share. EGAT also has sold off the Electricity Generating Public Co. Ltd. of Thailand (EGCO). Ratchaburi Electric Generating Company is an IPP. Thailand has two other state-owned electric companies: the Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA).
Major Refineries (Crude oil refining capacity - bbl/d): Shell Company of Thailand (275,000); Thai Oil Co. Ltd (185,000); Esso Standard Thailand Ltd. (160,000); Petroleum Authority of Thailand (61,750)
Major Ports: Bangkok; Laem Chabang; Pattani; Phuket; Sattahip; Si Racha; Songkhia

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LINKS

For more information on Thailand, see these other sources on the EIA web site:
EIA - Country Information on Thailand

Links to other U.S. government sites:
CIA World Factbook - Thailand
U.S. Department of Energy - Office of Fossil Energy - Thailand
U.S. State Department Consular Information Sheet - Thailand
U.S. State Department Country Commercial Guide - Thailand
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